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The INTERNET 3 has two providers of access 31, 32 to the INTERNET, also connected to the STN 4, to which the users of terminals 1 and 2 are respectively

The software architecture of terminals 1 and 2 is inspired by the recommendation H 323 of the ITU with, at the top of level 7 in the OSI (Open Systems Interconnection) classification, an application relating here to telephony across the INTERNET 3.

The service provider 31 has a memory 311 which it places at the disposal of terminal 1, with respect to its writing, memory 311 which is accessible for reading purposes from any device on the INTERNET 3, providing that device supplies the memory address information necessary to retrieve a specific electronic document from the memory 311.

In a general way, the memory 311 may be installed in any location whatever, perhaps remote from the service provider 31, to the extent that the latter serves as intermediary designed to allow access to that memory 311. The latter could therefore be situated in a computer centre, or even with another service provider, with the service provider 31 establishing an INTERNET link, for instance, when access to the memory 311 is required.

Generally, the establishment of a communication, on the first, computer network 3 of INTERNET type, between two devices, here the terminals 1 and 2 of this first, computer network: 3 and of the second, telephone network 4, involves the following steps:

one of the two calling devices 1 dials up the other 2 on the second, telephone network 4 to invite it into the said communication by giving it the references of

a message accessible on the computer network 3:

the calling device 1 connects itself to the first, computer network 3, receives an IP1 computer address and incorporates it into the aforesaid message, and

the called device, 2, connects itself to the first, computer network 3, accesses the aforesaid message, obtains the IP1 computer address of the calling device 1 and establishes the aforesaid communication.

The above process thus avoids the necessity of a rendez-vous or communication server, by inviting terminal 2 to consult the message at the memory-site 311 containing the up-to-date IP1 address.

The IP31 or URL address information of the access provider 31 may be a classic INTERNET address or simply a reference allowing the latter to be retrieved, for instance the name of the service provider, in order to access the message, to write it and to read it, via that provider.

In that example, terminal 1 composes the electronic mail in the form of at least one HTML page on which is included a marker specifying the position of the IP1 computer address on the page. In that example, it is a question of a command character, invisible on a screen.

In order to avoid establishing a communication via the INTERNET 3 between two terminals 1 and 2 which would not be compatible, at the time of the call via the telephone network 4 the two terminals 1 and 2 exchange signals verifying their compatibility for communication across the INTERNET 3. For this purpose, the CCITT Q931 protocol is used here. A secret code word is transmitted by terminal 1 to terminal 2, which the latter subsequently retransmits, via the INTERNET 3, to terminal 1 so that the latter agrees to enter into communication.

In addition, the signals contain an identifier N1 for the terminal 1 calling via the telephone network 4, which allows terminal 2, or its user reading these signals on a terminal 2 display, perhaps to refuse to establish the sought for INTERNET communication. The identifier is, for instance, the telephone number N1 of terminal 1, issued by the CLASS service of the telephone network 4.

In particular, it can be arranged that terminals 1 and 2 automatically establish communication between each other and each then activates warning mechanisms such as a bell or indicator light, to inform the users of devices 1 and 2.

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In even greater detail, in this example terminal 1, calling terminal 2 via the STN 4, issues a signal CNJa at 1300 Hz which terminal 2 recognises, here without activating its bell, and it replies by continuous emission of a signal at 1300 Hz followed by a V21 identification frame containing a terminal 2 identifier, such as the serial number and manufacturer. Terminal 1 replies with an NSC frame which contains an identifier for terminal 1, the IP31 computer address of the server 31, the name of a directory and an HTML page file name together with the secret authentication code. Terminal 2 executes acceptance of this data by emitting a DCN frame and the two terminals 1, 2 "hang up" to free their lines 14, 24.

Terminal 1 calls its service provider 31 and edits an HTML page, with the name XX of the directory and a name YY of the file for the message of the page and the IP1 computer address which it has obtained from the service provider 31, and sends the HTML message to the provider 31 who places it in the memory 311 in a section specified by the name XX of the directory above, transmitted to terminal 1.

It will be noted that the telephone call from terminal 1 to terminal 2 may take place after dispatch of the HTML page to the service provider 31, but it is also possible for the calling terminal 1 to dial up the other terminal 2 first of all on the second, telephone network 4, prior to connecting itself to the first telephone network, INTERNET 3, providing there is no risk of terminal 2 calling the service provider 31 too quickly since it does not yet have the HTML page, or if it is not up to date with respect to the IP1 address. In a particular instance, terminal 1 may however have instructed terminal 2 not to call until after a delay or a specified time.

In practice, the message on the HTML page may be retained permanently in the memory 311 and the service provider simply updates the IP1 address, perhaps automatically, each time it provides a new IP1 address to terminal 1 which calls it.

The service provider 32 here has a classic rôle, in contrast to the service provider 31. Terminal 2 calls the latter using the INTERNET 3, via its service provider 32 and sends it the IP31 address to establish a link such as that bearing the reference 33. Once the service provider 31 has been reached by terminal 2, the latter sends it the memory address information or reference (name XX of the directory and name YY of the file) previously received from terminal 1 via the STN 4 for reading access to the HTML page deposited in the memory 311 by terminal 1. The message reference transmitted from terminal 1 to terminal 2 may simply indicate a message, the address of which is already known to terminal 2.

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When terminal 2 then calls terminal 1, that amounts in fact simply to extending the link 33, already established with the service provider 31, to line 14. Terminal 2 then sends its address IP2 to terminal 1. In practice, as the service provider 31 has already received this computer address IP2 from terminal 2 to communicate with the latter, that amounts to ordering the server 31 to communicate the IP2 address to terminal 1. This command may originate from terminal 2 or from terminal 1, perhaps by the sole fact of the service provider 31 being called by one or other of terminals 1, 2. Terminal 2 at least then has at its disposal in all cases the IP1 computer address of the other terminal 1 and may therefore communicate with it. Terminal 2 then sends to the IP1 address a SETUP signal with its IP2 address and the secret code word to authenticate its identity. Terminal 1 in return sends a CONNECT connecting signal if it recognises the authentication code word and terminal 2 replies with a CONNECT-ACK signal of agreement, followed by an exchange of packets of useful data, such as voice or computer data such as faxes, or electronic mail.

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